

U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE (REV 10/01)		ATTORNEY'S DOCKET NUMBER BDL-364XX
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 36 U.S.C. 371		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/009885
INTERNATIONAL APPLICATION NO. PCT/FR00/01294	INTERNATIONAL FILING DATE 12 May 2000 (12.05.00)	PRIORITY DATE CLAIMED 14 May 1999 (14.05.99)
TITLE OF INVENTION A NIB AND METHODS OF TREATING AN ELONGATE ELEMENT DESIGNED TO FORM SUCH A NIB		
APPLICANT(S) FOR DO/EO/US JOSÉ DUEZ, VINCENT BEDHOME, PHILIPPE CHAVATTE		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<p>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <ol style="list-style-type: none"> <input type="checkbox"/> is attached hereto (required only if not transmitted by the International Bureau). <input checked="" type="checkbox"/> has been communicated by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(3))</p> <ol style="list-style-type: none"> <input checked="" type="checkbox"/> is attached hereto. <input type="checkbox"/> had been previously submitted under 35 U.S.C. 154(d)(4). <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <ol style="list-style-type: none"> <input type="checkbox"/> are attached herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been communicated by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input checked="" type="checkbox"/> have not been made and will not be made. <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p>		
<p>Items 11. to 20. below concern document(s) or information included:</p> <p>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A FIRST preliminary amendment.</p> <p>14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821-1.825</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: FORMAL DRAWINGS (1 sheet) VERIFICATION OF A TRANSLATION OF PCT/FR00/01294</p>		

U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/009885	INTERNATIONAL APPLICATION NO PCT/FR00/01294	ATTORNEY'S DOCKET NUMBER BDL-364XX	
21. <input checked="" type="checkbox"/> The following fees are submitted:		CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):			
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,040.00			
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00			
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00			
International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00			
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00			
ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 890.00			
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)). \$ 0			
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	13 - 20 =	0	X \$18.00
Independent claims	1 - 3 =	0	X \$84.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+\$280.00
TOTAL OF ABOVE CALCULATIONS =			\$ 890.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.			\$ N/A
SUBTOTAL =			\$ 890.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			\$ 0
TOTAL NATIONAL FEE =			\$ 890.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property			\$ 0
TOTAL FEES ENCLOSED =			\$ 890.00
			Amount to be Refunded: \$
			Charged: \$
a. <input checked="" type="checkbox"/>	A check in the amount of <u>\$ 890.00</u> to cover the above fees is enclosed. A check in the amount of <u>\$ _____</u> is enclosed for the assignment recordation fee.		
b. <input type="checkbox"/>	Please charge my Deposit Account No. _____ in the amount of <u>\$ _____</u> to cover the above fees. A duplicate copy of this sheet is enclosed.		
c. <input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>23-0804</u> . A duplicate copy of this sheet is enclosed.		
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.			
Customer Number 207			
SEND ALL CORRESPONDENCE TO:			
Weingarten, Schurigin, Gagnebin & Lebovici LLP Ten Post Office Square Boston, Massachusetts 02109			
NAME: Charles L. Gagnebin III REGISTRATION NUMBER: 25,467 Date: <u>11-13-1</u>			

Page 2 of 2 Submit in Triplicate

CLG/mc/262002-1

Weingarten, Schurgin, Gagnebin & Lebovici LLP
Ten Post Office Square
Boston, Massachusetts 02109

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application : JOSÉ DUEZ, ET AL.
Application No. :
Filed : Herewith
For : A NIB AND METHODS OF TREATING AN
ELONGATE ELEMENT DESIGNED TO FORM SUCH
A NIB
Examiner :
Attorney's Docket : BDL-364XX

Group Art Unit:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on

By: _____
Charles L. Gagnebin III
Registration No. 25,467
Attorney for Applicant(s)

PRELIMINARY AMENDMENT

BOX PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

Kindly enter the following Preliminary Amendment in the above-identified application:

In the Title:

Please amend the title to read as follows:

Express Mail Number

EV 009949821 US

Attorney Docket No. BDL-364XX
Filed: Herewith
Group Art Unit:

A NIB AND METHODS OF TREATING AN ELONGATE ELEMENT DESIGNED TO
FORM SUCH A NIB

REMARKS

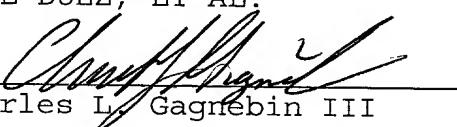
This Preliminary Amendment amends only the title of the application.

This Application contains a translation of the title and abstract as they were when originally filed by the Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g., under PCT Rules 37.2, 38.2, and/or 48.3.

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter which would expedite allowance of the present application.

Respectfully submitted,

JOSE DUEZ, ET AL.

By: 
Charles L. Gagnébin III
Registration No. 25,467
Attorney for Applicant(s)

WEINGARTEN, SCHURGIN, GAGNEBIN
& LEBOVICI LLP
Ten Post Office Square
Boston, MA 02109
Telephone: (617) 542-2290
Telecopier: (617) 451-0313

Date: 11-13-1

CLG/mc/261956-1

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A NIB AND METHODS OF TREATING AN ELONGATE ELEMENT
DESIGNED TO FORM SUCH A NIB

The present invention relates to the field of writing implements, and more particularly to high porosity nibs ensuring the transfer of ink from a liquid ink reservoir or a fibrous reservoir to the end of said nib serving as the writing tip.

BACKGROUND OF THE INVENTION

The nib necessarily projects from the body of the implement that the user holds while writing. The ink consumed on the writing medium is replaced as it is being used by ink coming from the reservoir and transferred by capillarity into the nib. When the implement is no longer in use, a cap is fitted onto the body of the implement in such a manner as to cover the nib, firstly to protect it from possible impacts and secondly to prevent it from drying out. If the projecting end of the nib remains in the open air, the solvent of the ink which is situated in the end evaporates whilst the pigment of the ink remains therein. That phenomenon can be detrimental in the sense that it may be difficult, or indeed even impossible, to make further use of the implement, even when a significant quantity of ink remains in the reservoir.

To avoid that drawback, manufacturers of writing implements have already proposed a certain number of solutions for increasing the length of time it is possible to leave a nib in the open air without any major difficulty in using the implement again.

A first solution consists in modifying the composition of the ink by adding additives of the film-forming type. During evaporation of the solvent, a film is formed on the surface of the nib which limits further evaporation, said film being very fragile so that it is eliminated when the user applies the nib once again on the writing medium.

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A similar solution is adopted in document J 54019826 in which the nib is coated in a high polymer that is gastight and easy to peel off. By way of example, the high polymer can be a copolymer resin of vinyl chloride and of vinyl acetate, or an EVA copolymer resin. In that document, such a coating is provided merely to prevent the ink from evaporating, and the nib from drying out during storage and transport of the writing implements, given that the high polymer coating is easily removed before use.

OBJECTS AND SUMMARY OF THE INVENTION

The first object set by the Applicant is to propose a nib which mitigates the above-mentioned drawback by significantly increasing the length of time it is possible to leave said nib in the open air, without any effects that prevent the implement being used.

This object is fully achieved by the nib which, in known manner, is constituted by a segment of an elongate element of high porosity material, with at least a first end shaped to form a writing tip.

In characteristic manner, the pores and/or capillaries of said material are blocked over a limited thickness ϵ at the longitudinal outer periphery of the elongate element, with the exception of the first end.

For an elongate element of circular cross-section, having a diameter lying in the range 2 mm to 15 mm, the thickness ϵ preferably lies in the range 0.01 mm to 1 mm.

In a first variant embodiment, the nib includes a sealing agent which blocks the pores and/or the capillaries of said material over said thickness ϵ .

This variant is particularly suitable when the elongate element is a rod that is constituted by fibers that have previously been held together by a binder. For acrylic fibers that are held together by a melamine formaldehyde (MF) resin, for example, the sealing agent can also be an MF resin. For polyester fibers, for example, the sealing agent can be either an acid-

catalyzed melamine resin, or a melamine urea-formaldehyde resin, or a two-component epoxy resin, or a two-component polyurethane resin.

In a second variant embodiment, the elongate element
5 is constituted by a hot-melting material, and the pores
and/or capillaries are blocked by localized hot-melting
of said material over said thickness ϵ . This second
variant is particularly suitable when the elongate
element is constituted by sintered microbeads.

10 Another object of the invention is to propose
methods of treating high-porosity elongate elements,
designed to form the above-mentioned nibs, in accordance
with the first and second variants.

In the first variant, the method of the invention
15 consists firstly in continuously impregnating a coherent
high-porosity, elongate element with a sealing bath
having a sealing agent that is inert relative to the
components of the ink, impregnation being performed under
conditions of concentration, of surface tension, of
20 viscosity, and of time in particular, such that said bath
diffuses into the elongate element over a limited
thickness ϵ at its periphery, and said method consists
secondly in setting the sealing agent.

During manufacture of the nib from the elongate
25 element, said elongate element is cut into segments, and
each segment is machined at least at the end designed to
form the writing tip. As a result, the central zones of
the cut and machined ends are exempt of sealing agent and
enable ink to be transferred normally. In contrast, the
30 sealing agent blocks the pores or capillaries on the
surface of the elongate element, thereby creating a
barrier preventing the ink solvent from evaporating.

Most nibs are constituted from fibers which are
presented in the form of a tow or ribbon and which are
35 joined and bonded together by a binder to form a
coherent, elongate element referred to as a rod. In this
case, said binder is preferably used as the sealing agent

in the method of the invention. This particular disposition presents many advantages. The binders used to form nibs from fibers are well known. There is therefore no risk in choosing such binders as sealing agents with regard to the stability over time and the inertness with regard to the ink. In addition, manufacturers are entirely familiar with the techniques of cutting and machining nibs out of known fibers and binders. Thus, sealing the periphery of the nib with the same agent is therefore unlikely to disrupt the operation of conventional tooling to any significant extent, in contrast to what could happen if some other compound were to be used as the sealing agent.

For a nib based on acrylic fibers, in particular, the compound acting as binder and sealing agent is preferably an acid-catalyzed melamine resin.

The sealing agent is generally set merely by subjecting the elongate element to heat treatment (heating or cooling) after the impregnation operation.

In the second variant embodiment, the method of the invention consists in applying a thermal shock over the longitudinal periphery of the elongate element or of the segment of elongate element, with the exception of the first end which forms the writing tip, so as to obtain localized hot-melting of the hot-melting material over a thickness \underline{e} .

The operating conditions of the shock treatment are a function of the material constituting the elongate element. For an elongate element made of polypropylene microbeads, in particular, the thermal shock is performed at a temperature lying in the range 200°C to 300°C for a period of 1 second (s) to 10 s.

BRIEF DESCRIPTION OF THE DRAWING

The present invention will be better understood on reading the following description of an implementation of the method for treating a rod of acrylic fibers for use

in the manufacture of a nib, shown in the accompanying drawing, in which:

Figure 1 is a diagram of an installation implementing said method; and

5 Figure 2 is a perspective view of a nib obtained from the rod treated thereby.

MORE DETAILED DESCRIPTION

In implements having liquid ink or a fibrous reservoir, the ink is transferred via a coherent high-porosity, elongate element enabling the ink to be transferred, by means of its capillarity, from the reservoir to the writing tip while said writing tip is consuming the ink.

In a first variant embodiment, the nib is made from a tow of continuous filaments or from a ribbon of discontinuous fibers, in particular acrylic fibers, juxtaposed and held together to form a coherent rod. The continuous rod is cut to form segments of determined length having at least one end that is machined to form the writing tip. The machining requirements are a function of the type of writing implement envisaged. The machining can form two beveled edges and a rounded end as in document EP 0 857 586 or any other appropriate shape.

The ink that is consumed by being deposited on a writing medium is replaced as it is being used by ink which diffuses into the nib through the pores and capillaries.

According to the invention, the rod from which the nibs are taken is subjected to special treatment for limiting the unacceptable phenomenon of the nib drying out when the implement remains uncapped, i.e. when the nib remains in the open air for a long period of time, e.g. several hours, or indeed several days.

In this first variant, the treatment of the invention consists in impregnating the rod as it moves continuously through a treatment bath containing a sealing agent. The term "sealing agent" refers to a

compound that is suitable for filling the pores or capillaries of the material constituting the tow in such a manner that, once said compound has set, the pores or capillaries are plugged and a substantially airtight barrier is thus created preventing the ink solvent from evaporating or limiting evaporation thereof.

Once impregnated, the rod is subjected to an additional operation of setting the sealing agent. This operation depends on the type of compound used as the sealing agent in the treatment bath. It is generally heat treatment requiring a heat supply in order to evaporate the bath solvent, or in order to cross-link or polymerize the sealing agent, or it may even require cooling when the sealing agent is a paraffin that is applied when hot.

The operating conditions under which impregnation is performed must be determined in such a manner that the sealing agent is diffused over a limited thickness ϵ at the longitudinal outer periphery of the tow. The thickness ϵ must be sufficient to block the network of pores and capillaries at the surface completely and to create the barrier phenomenon. It is not desirable for the thickness ϵ to be too thick insofar as the presence of the sealing agent correspondingly reduces the effectiveness of the rod with regard to its primary function which is to transfer ink by capillarity.

For a rod of circular section, having a diameter lying in the range 2 mm to 15 mm, it has been found that the diffusion thickness ϵ for the sealing agent should lie in the range 0.01 mm to 1 mm.

Figure 1 is highly diagrammatic and shows the two treatment stages of the invention using a device 1 successively comprising, along the path of the rod 2, an impregnation head 3 and a setting oven 4.

The impregnation head is constituted by a reservoir 5 containing the treatment bath 6. Two facing vertical walls 7, 7' of the reservoir 5 are pierced with two

openings 8, 8' that are shaped exactly like the cross-section of the rod 2. Each opening 8, 8' is extended outwards by a shoulder 9, 9', in particular an annular shoulder when the cross-section of the rod is circular.

5 The method is implemented by inserting the rod 2 through the shoulders 9, 9' and the openings 8, 8' of the impregnation head, and through the openings 10, 10' of the setting oven 4.

10 The rod is drawn continuously through the impregnation head 3 and the setting oven 4.

As mentioned above, the size of the openings 8, 8' and of the shoulders 9, 9' matches the cross-section of the rod 2 in such a manner that the rod 2 itself co-operates with the inside wall of the shoulders 9, 9' to 15 form a gasket, preventing the treatment bath 6 from escaping directly.

During continuous displacement of the rod 2 through the impregnation head 3, the treatment bath 6 naturally diffuses through the pores and the capillaries situated 20 on the longitudinal outer periphery of the rod 2. The diffusion takes place over a thickness ϵ . The sealing agent which is contained in the treatment bath and which has diffused over said thickness is then set by the tow 2 passing through the setting oven 4.

25 It is easy for the person skilled in the art to modify and control the thickness ϵ by adjusting various parameters which influence the diffusion of the treatment bath and thus of the sealing agent, in particular the viscosity of the bath, the contact time, the surface 30 tensions of the rod and of the bath, and the concentration of sealing agent (dry extract) in the bath.

The function of the sealing agent is to block the pores and/or capillaries which are situated on the outer peripheral surface of the tow 2. It is essential for the 35 sealing agent to be insoluble and chemically inert relative to the various constituents of the ink which is

to be used in the writing implement, and in particular relative to the solvent of said ink.

The sealing agent can be a paraffin having a very high melting point, e.g. lying in the range 67°C to 70°C,
5 which is used in a writing implement having an alcohol-based ink. The sealing agent could be a two-component epoxy or polyurethane resin.

However, when the rod 2 is made of fibers that are bound together, the same compound that serves as a binder
10 for the fibers is preferably also used as the sealing agent.

Given that such binders are already used by manufacturers of nibs, said manufacturers are perfectly aware of their insolubility and their chemical inertness
15 relative to the inks used. In addition, manufacturers are entirely familiar with the cutting and machining operations to be performed on the corresponding rods, so they can easily adapt the cutting and the machining of rods to the invention since the compounds are the same
20 and only the quantity of binding/sealing agent is increased. This avoids the risks inherent in introducing some other compound, in particular the risks of clogging the various tools serving to cut and machine the nib.

The rod 2' obtained at the outlet of the setting
25 oven is cut into segments of length L, each segment being designed to constitute a nib 11, as shown in Figure 2. In the example, only the front end 12 of the nib 11 is machined in order to form the writing tip 13, the rear end 14 resulting from the transverse cut of the rod 2'.
30 The front end 12 is sharpened, with a rounded end forming the writing tip 13.

The nib 11 thus includes a cylindrical rear portion
35 16 and a converging front portion 17 terminated by the writing tip 13.

In the cylindrical rear portion 16, the pores or capillaries situated on the outer periphery are sealed by a sealing agent 15 over a thickness e.

When the nib 11 is assembled in a writing implement, it is filled with ink, in known manner, in the capillaries of the unsealed central zone of the fibers. The central zone 18 extends from the rear end 14 to the 5 writing tip 13. In the cylindrical rear portion 16, the central zone 18 is surrounded by the outer peripheral zone 19 in which the sealing agent is situated, said peripheral zone creating a substantially airtight barrier preventing the ink solvent from evaporating or limiting 10 evaporation thereof.

Thus, when the nib 11 is positioned in the writing implement, its rear end 14 comes directly into contact with the ink of the reservoir which diffuses by capillarity through the unsealed fibers of the central 15 zone 18 to the writing tip 13.

With regard to the portion that projects outside the body of the writing implement, only the converging front portion 17 includes ink-impregnated fibers which can be exposed directly to the open air. The person skilled in 20 the art must choose the method of machining said portion 17 in such a manner as to limit the area which is exposed to the open air while maintaining an acceptable writing tip 13.

For a rod made of acrylic fibers, the sealing agent 25 15 is preferably an acid-catalyzed MF resin which is also used as a binder for binding the acrylic fibers together in the structure of the rod 2. The sealing agent can be an MF resin having 90% dry extract, e.g. as marketed by HOECHST in the MAPRENAL range or by MONSANTO in the 30 RESIMENE range.

By way of example, the following conditions have been implemented with said MF resin: speed of displacement of the rod of 30 centimeters per minute (cm/mn) for an impregnation length of 3 cm; ambient 35 temperature; viscosity of the bath adjusted with thixotropic agents (bentonite, silica, or polyurethane thickening) to approximately 10000 centipoise (cPo); and

surface tension of the bath lying in the range 23 dynes per centimeter (dyn/cm) to 25 dyn/cm.

For a rod made of polyester fibers, the sealing agent is preferably an acid-catalyzed melamine resin, a
5 melamine urea-formaldehyde resin, a two-component epoxy resin, or a two-component polyurethane resin.

In a second variant embodiment, the nib is made from sintered microbeads. In this case, the microbeads are placed in a mold having an inside configuration that is
10 the configuration desired for the nib, and sintering is obtained by an appropriate heat treatment enabling the desired microporous structure to be achieved through the interconnection of the various microbeads.

In this second variant, the treatment method of the
15 invention consists in applying a thermal shock over the segment of elongate element, with the exception of the first end which forms the writing tip and with the exception of the transverse face of the second end, so as to obtain localized hot-melting of the microbeads at the
20 longitudinal periphery of the segment over a limited thickness ϵ . Said thermal shock is applied under operating conditions that are determined so that the localized hot-melting of the microbeads enables the surface pores of the elongate element to be blocked. In
25 this case, there is therefore no need to add a sealing agent, since the constituent material of the microbeads is used as the sealing agent for the surface pores.

In an embodiment in which the microbeads are made of polypropylene, the thermal shock is performed at a
30 temperature lying in the range 200°C to 300°C, and preferably about 270°C, for a period of 1 s to 10 s, and preferably about 5 s.

It should be noted that localized hot-melting on the surface of the microbeads has the secondary technical
35 effect of increasing the strength of the elongate element. Until now, for an elongate element made from sintered microbeads, its porosity was limited because of

insufficient strength. By increasing its strength by means of the hot-melted peripheral zone, it becomes possible to increase the porosity of the middle zone which transfers the ink correspondingly. The same result
5 could possibly be obtained by implementing the method of the first variant, namely impregnation with a sealing agent.

CLAIMS

- 1/ A nib constituted by a segment of a coherent, elongate element of high porosity material, with at least a first end shaped to form a writing tip, wherein the pores and/or capillaries of said material are blocked over a limited thickness ϵ at the longitudinal outer periphery of the elongate element, with the exception of the first end forming a writing tip.
- 5
- 10 2/ A nib according to claim 1, wherein for an elongate element of circular cross-section, having a diameter lying in the range 2 mm to 15 mm, the thickness ϵ lies in the range 0.01 mm to 1 mm.
- 15 3/ A nib according to claim 1, including a sealing agent which blocks the pores and/or the capillaries of said material over said thickness ϵ .
- 20 4/ A nib according to claim 3, wherein the elongate element is a rod that is constituted by acrylic fibers that are held together by an MF resin, and wherein the sealing agent is also an MF resin.
- 25 5/ A nib according to claim 3, wherein the elongate element is a rod that is constituted by polyester fibers, and wherein the sealing agent is an acid-catalyzed melamine resin, a melamine urea-formaldehyde resin, a two-component epoxy resin, or a two-component polyurethane resin.
- 30 6/ A nib according to claim 1, wherein the elongate element is constituted by sintered microbeads, and wherein the pores are blocked by localized hot-melting of said microbeads over said thickness ϵ .
- 35 7/ A method of treating a coherent high porosity, elongate element designed to form a nib according to

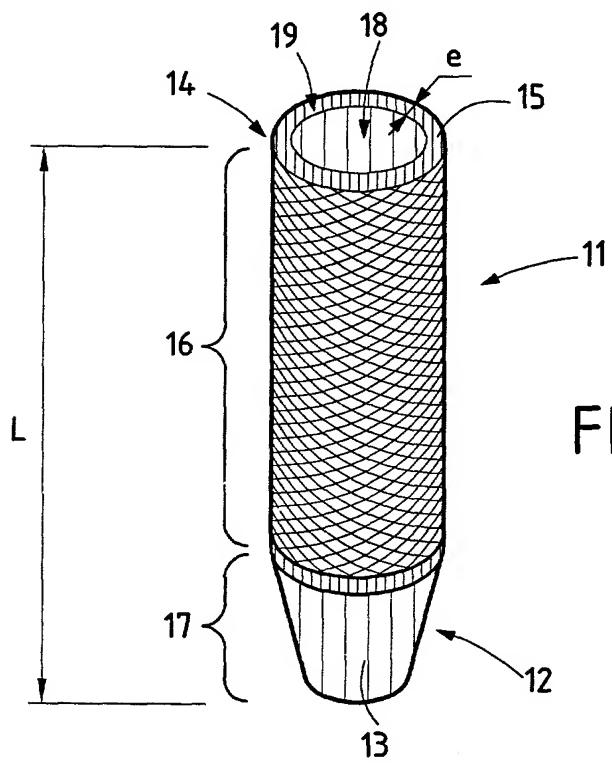
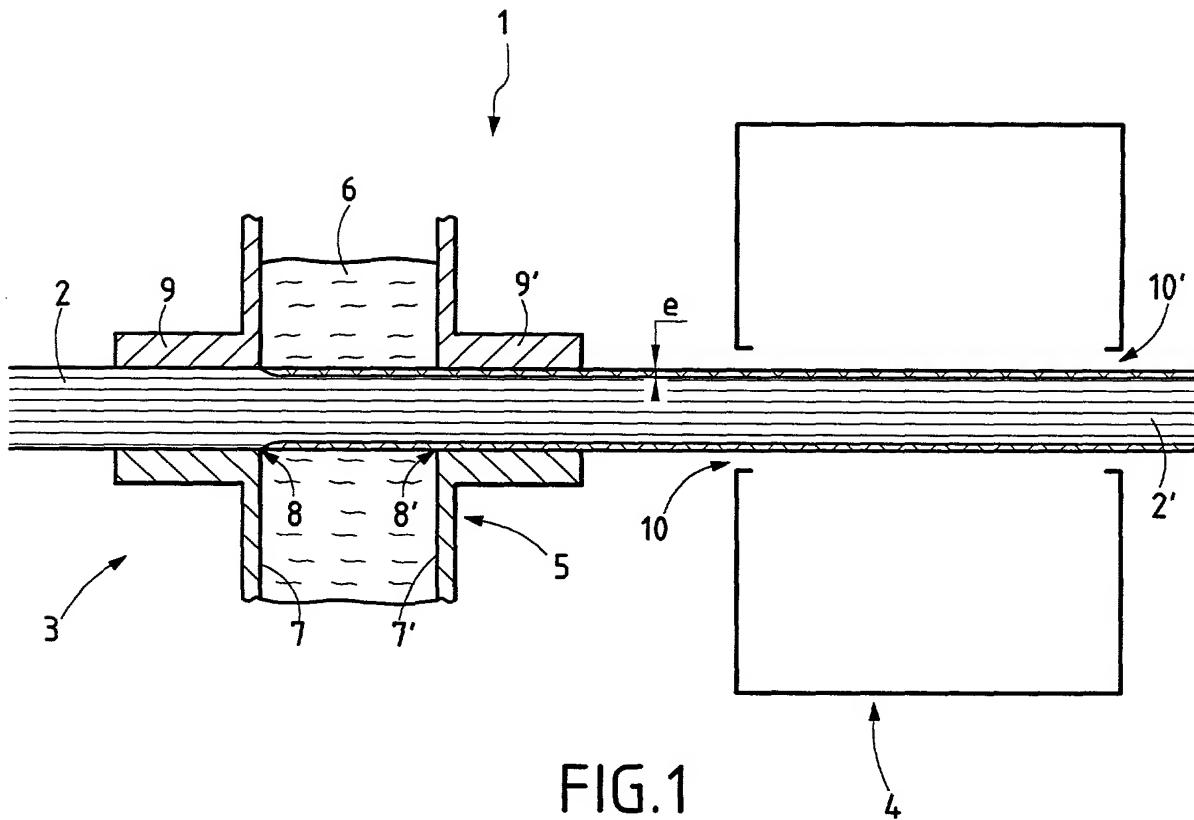
- claim 3, the method consisting firstly in continuously impregnating said elongate element with a sealing bath having a sealing agent that is inert relative to the components of the ink, impregnation being performed under
5 conditions of viscosity, of time, of surface tensions, and of concentration in particular, such that said bath diffuses into the elongate element over a limited thickness ϵ at its longitudinal periphery, and said method consists secondly in setting the sealing agent.
- 10 8/ A method according to claim 7, wherein the elongate element is a rod that is constituted by fibers that are secured by a binder, and said binder is used as the sealing agent.
- 15 9/ A method according to claim 8, wherein the rod is based on acrylic fibers, and the binding and sealing agent is an acid-catalyzed MF resin.
- 20 10/ A method according to claim 7, wherein the sealing agent is set by subjecting the elongate element to heat treatment.
- 25 11/ A nib obtained by cutting into segments and machining a high porosity elongate element treated according to the method of claim 7.
- 30 12/ A method of treating a segment of coherent high porosity, elongate element designed to form a nib according to claim 6, wherein said segment is obtained by molding and sintering microbeads, and said method consists in applying a longitudinal, peripheral, thermal shock over the segment, with the exception of the first end which forms the writing tip, so as to obtain
35 localized hot-melting of the microbeads over a thickness ϵ .

13/ A method according to claim 12, wherein the thermal shock is performed at a temperature lying in the range 200°C to 300°C for a period of 1 second (s) to 10 s.

10/009885

Title: A NIB AND METHODS OF TREATING
AN ELONGATE ELEMENT ... SUCH A NIB
Inventors: José Duez, et al.
Appl. No. (filed Herewith)
Docket No.: BDL-364XX

1/1



0/01

Sheet 1 of 4

#6

Attorney
Docket No.: BDL-364XX

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

A NIB AND METHODS OF TREATING AN ELONGATE ELEMENT
DESIGNED TO FORM SUCH A NIB

The specification of which (check one):

[] is attached hereto. [X] was filed on November 13, 2001 as Application No. 10/009,885; amended on _____ (if applicable).

[X] was filed as PCT International Appl. No. PCT/FR00/01294 on May 12, 2000, and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, USC §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>		<u>Date Filed</u>	<u>Priority Claimed</u>	
99 06312 (Number)	France (Country)	14 May 1999 (Day/Month/Year)	[X] Yes	[] No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year)	[] Yes	[] No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year)	[] Yes	[] No

I hereby claim the benefit under Title 35, USC §119(e) of any United States provisional application(s) listed below:

_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)

Express Mail Number

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I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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(Application No.)	(Filing Date)	(Patented/pending/abandoned)
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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

① Stanley M. Schurgin, Reg. No. 20,979
 Charles L. Gagnebin III, Reg. No. 25,467
 Victor B. Lebovici, Reg. No. 30,864

Beverly E. Hjorth, Reg. No. 32,033
 Holliday C. Heine, Reg. No. 34,346
 Gordon R. Moriarty, Reg. No. 38,973
 James F. Thompson, Reg. No. 36,699

Address all correspondence to:

Customer Number: 207

WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP
 Ten Post Office Square
 Boston, Massachusetts 02109
 Telephone: (617) 542-2290
 Telecopier: (617) 451-0313

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First/Sole Inventor: José DUEZ

City of Residence <u>Boulogne Sur Mer</u>	State or Country <u>France JRL</u>	Country of Citizenship <u>France</u>
Post Office Address <u>332 Boulevard Sainte Beuve</u>	City <u>62200 Boulogne Sur Mer</u>	State or Country Zip Code <u>France</u>
Signature: (Please sign and date in permanent ink.) <u>José DUEZ</u>		Date signed: <u>x November 26, 2001</u>

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Full Name of Second/Joint Inventor: Vincent BEDHOME

City of Residence <u>Desvres</u>	State or Country France <u>JRX</u>	Country of Citizenship France
Post Office Address <u>64 Bis route de Crémarest</u>	City <u>62240 Desvres</u>	State or Country Zip Code France

Signature: (Please sign and date in permanent ink.) <u>x</u> <u>Vincent Bedhome</u>	Date signed: <u>x November 26, 2001</u>
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Full Name of Third/Joint Inventor: <u>Philippe CHAVATTE</u>			
City of Residence <u>Hesdin-L'Abbe</u>	State or Country France <i>JRX</i>	Country of Citizenship France	
Post Office Address 7 allée des Bergeronnettes	City 62360 Hesdin-L'Abbe	State or Country	Zip Code
Signature: (Please sign and date in permanent ink.) <i>Philippe Chavatte</i>		Date signed: <i>x November 26, 2001</i>	

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